REMARKS

Claims 1–24 are pending.

The drawings have been objected because Figs. 2A–2D have not been designated by a legend such as "Prior Art". Applicant respectfully requests the Examiner (since the Examiner is better suited to indicate what would be a non–objectionable legend) to suggest a suitable legend that does not indicate that Figs. 2A–2D are prior art nor art that can be used, by its self or in combination with other art, as a basis for rejecting the pending claims. The Examiner should take into consideration, however, that Figs. 2A–2D are the results of Applicant's experimentation and/or understanding of the operation of the exemplary device of Fig. 1 and that there is no record of waveforms of Figs. 2A–2D ever having been published.

The specification was objected to for the use of the phrase "Cross Reference To Related Applications". According the Applicant has changed the offending phrase which refers to a Korean based priority document to --Claim Of Priority--. Therefore, since the Examiner has indicated on page 9 of Paper No. 14, that the foregoing correction would be acceptable, the objection should be withdrawn.

Additionally, the Examiner has indicated that that part of the specification between page 7, line 12 and page 10, line 8, should be in the Background section of the specification. However, as noted in a previous response, that portion of the specification between page 9, line 1 and page 10, line 8 discuss the Applicant's work with regard to Figs. 2A–2D, which figures, as discussed earlier, are not prior art. Accordingly, since the discussion of Figs. 2A–2D are the

result of the Applicant's work with respect to the apparatus of Fig. 1 and as such are entitled to discussed in the detailed description portion of the specification, then it is clearly evident that the description of Fig. 1 should remain as originally filed to preserve the continuity of the specification. Accordingly, the objection should be withdrawn.

The specification has been objected to and claims 1-24 have subsequently been rejected under 35 U.S.C. §112, first paragraph. The objection/rejection is deemed to be in error for the following reasons.

First, the Examiner has erroneously indicated that one of ordinary skill in the art would not know how to make the "printing control means", the "data bus means" and the "beam scanning means" because the "structure for performing the separate functions attributed thereto is not disclosed."

In referring to Applicant's statement on page 10 of the specification, *i.e.,* "well known circuit characteristics and its functions are not explained in detail so as not to obscure an embodiment of the present invention. Further, the stages that are the same or similar to those of the conventional techniques described previously will be assigned with the same reference numerals", The Examiner has stated:

> "it is not clear whether any given element with a [reference] numeral the same as the prior art is actually the same element as in the prior art, and if not its structure is wholly unspecified."

Applicant has already admitted, on the record that the "printing control means", the "data bus means" and the "beam scanning means" of Fig. 1 have been disclosed as being well known in the art. The Examiner's continued insistence on objecting to the specification appears to be

an attempt to have the applicant remove the phrase "similar to" from the specification where it state "or similar to those of the conventional techniques described previously" from the specification. Therefore, the phrase has been omitted by the foregoing amendment.

Further, since 37 CFR §1.84(p)(4) states that the "same part of an invention appearing in more than one view of the drawing must always be designated by the same reference character, and the same reference character must never be used to designate different parts", and since Applicant's originally filed specification used in Fig. 5, the same reference character for the parts of Prior Art Fig. 1, then, by definition of §1.84(p)(4) the parts are the same. Accordingly, removal of the phrase "similar to" does not constitute new matter.

The Examiner's statement on page 12 of Paper No. 14, *i.e.,* Applicant's admission that the claimed print control means, data bus means and beam scanning means are prior art is noted", is misleading and should not be construed to indicate that, for example, the print control means of the prior art operates in response to chopped data. The difference between the print control means claimed and that of Fig. 1 is that the claimed print control means provides beam data in response to chopped data whereas the print control means in Fig. 1 provides beam data in response to data (on line 12) that is not chopped. As admitted by the Applicant, there is no difference between the beam scanning means claimed and the beam scanning unit 20 of Prior Art Fig. 1, and the data bus means of claim 18 is simply a well known data bus.

Therefore, the objection/rejection is deemed to be in error and should be withdrawn.

Claims 1–24 were rejected under 35 U.S.C. §112, second paragraph based upon a number of deficiencies kindly noted by the Examiner. Accordingly the above amendment is believed to correct for those deficiencies not discussed below.

First, the rejection of claims 1–4 and 6–22 is in error because the apparent §112, second paragraph deficiencies of claims 5 and 23 are not found in any of claims 1–4 and 6–22.

Second, with respect to claim 5, the Examiner has indicated that claim 5 lacks a function for the claimed mode selection means. Claim 5, however states in part: *mode selecting means enabling a user to change a characteristic of said second clock signal.* Accordingly, the "means" of claim 5 is the *mode selection means*, and the claimed function for the mode selection means is *enabling a user to change a characteristic of said second clock signal*. The Examiner refers to Paper No. 12, lines 3–12, wherein he has stated that claim 5 recites "means enabling a user to change a characteristic of said second clock signal". The Examiner's foregoing statement does nothing but repeat a portion of the claim and fails to satisfy the Examiner's burden of proof, because the Examiner has not indicated why the claimed function of *enabling a user to change a characteristic of said second clock signal* is not a "specified function" of the claimed *mode selection means*. If the *enabling...* function is not the function of the *mode selection means*, then what is the *enabling...* function a function of? Accordingly, the function of the mode selecting means of claim 5 is clearly provided, and the rejection should be withdrawn.

Third, with respect to claim 23, the Examiner has indicated a lack of understanding with regard to the specification and its relation to the claimed clock signal generating means. The Examiner is respectfully requested to review, for example, page 12, lines 3–13 and Fig. 3,

wherein the clock signal generating means is clearly described and shown in the drawings as comprising at least elements 40, 50 and 60. Accordingly, the rejection is deemed to be in error and should be withdrawn.

Claims 1–24 were rejected under 35 U.S.C. §103, as rendered obvious and unpatentable, over Prior Art Figs. 1 and 2A–2D, in view of Tomita et al. (hereafter: Tomita) and Hayashi et al. (hereafter: Hayashi). The applicant respectfully traverses this rejection for the following reason(s).

First, note that Figs. 2A–2D are, as previously argued, the result of Applicant's own experimentation and not "Prior Art".

Second, "Prior Art" Fig. 1 illustrates an electrophotographic developing device having a beam scanning unit 30 which is switched over according beam data to generate a laser beam to be scanned upon a photosensitive drum.

It is important to note that the problem confronted by the Applicant must be considered in determining whether it would have been obvious to combine references in order to solve that problem. See *Diversitech Corp. v. Century Steps, Inc.,* 850 F.2d 675, 7 USPQ2d 1315 (CAFC 1988).

Accordingly, the question raised is, if one of ordinary skill in the art were looking for an alternate method for adjusting the density of printed images without adjusting the bias voltage

of a developing unit in a laser printing device, such as that depicted by Prior Art Fig. 1, would one of ordinary skill in the art have looked to the Tomita and Hayashi et al. patents?

Tomita teaches one of ordinary skill in the art that in order to compensate for the different characteristics of each element of the LED array it has been proposed to change the driving time for each element. However, this will result in uneven dot image shapes and a lack of uniformity (col. 1, lines 20–34). Tomita further teaches that a proposed fix to the above mentioned problem results in a possibility of unevenness in density among the elements. Tomita contemplates a method and apparatus for driving a solid scan type recording head (col. 2, lines 32–40) capable of reducing the difference in density of the dots shapes generated by each element.

Tomita is for a solid scan device, *i.e.,* a device using an LED array whereas the device in Prior Art Fig. 1 uses a laser beam. The problem of different densities between elements in an LED array do not occur in a laser driven device, which does not have a plurality of elements. Accordingly, one of ordinary skill in the art would not have been motivated by Tomita to modify the laser printing device of Prior Art Fig. 1.

Applicant teaches that in order to control the printing density in a laser device, such a Prior Art Fig. 1, it is known that the bias voltage of a developer is changed to adjust the amount of the toner developed. Accordingly, an object of the present invention is to adjust the density of printed images without adjusting the bias voltage of a developing unit. Tomita is silent with regard to changing the bias voltage of a developer to adjust the amount of the toner developed. Hayashi et al. is also silent in this regard. The Examiner argues that this teaching is not germane to the issue because there is no claim language directed towards changing the bias voltage of the

developer unit to adjust the amount of toner developed. We agree that there is no such claim language. That is because the invention is an improvement over Prior Art Fig. 1. It is Prior Art Fig. 1 that comprises the teaching of changing the bias voltage of a developer to adjust the amount of the toner developed, which is germane to the issue.

According to the configuration and method of the present invention, chopped video data is generated by the printing control unit as beam data, and is then used for controlling the amount of light illuminating the photosensitive drum. The amount of the light is optimally controlled by selecting a second clock signal. Therefore, the user can adjust the density of printed images without adjusting the bias voltage of a developing unit.

Hayashi et al. does not provide any teaching which would have suggested using Tomita in order to modify the laser printing device of Prior Art Fig. 1. Hayashi et al. does suggest that a problem regarding image density may have been caused by humidity in a laser printing device. Hayashi et al., however, corrects for this problem by adjusting the current supplied to the laser element (Hayashi et al., col. 7, lines 1-5). Hayashi et al. does not suggest that this varying of the current to the laser device is in any way an alternative to the known method of changing the bias voltage of a developer to adjust the amount of the toner developed. Hayashi et al. may teach modifying the current supplied to beam scanning unit 30 of Prior Art Fig. 1, but Hayashi et al. clearly does not teach nor suggest adjusting density in Prior Art Fig. 1 by chopping the data provided by data transmitting unit 10 in accordance with a second clock signal in order to provide chopped data to the print control unit 20.

The Examiner has indicated that the reasons for combining the references is to "enable change of power level of the admitted prior art [Prior Art Fig. 1] light source in accordance with changes in environmental conditions, thereby facilitating provision of an image forming apparatus capable of forming an image with satisfactory tonal rendition regardless of changes in environmental conditions". As such, the Examiner insists that the proposed combination "involves solution of a problem which differs significantly from that disclosed by Applicant and is suggested by the cited references". We shall discuss this "problem" as follows:

Deficiencies in the factual basis cannot be supplied by resorting to speculation or unsupported generalities. *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967) and *In re Freed*, 425 F.2d 785, 165 USPQ 570 (CCPA 1970). There is no teaching regarding Prior Art Fig. 1 that there is a problem with forming an image with satisfactory tonal rendition due to changes in environmental conditions. Prior Art Fig. 1 already teaches controlling the image density. This control is performed by changing the bias voltage of a developer to adjust the amount of the toner developed. Accordingly, there is no factual evidence that there is a problem with Prior Art Fig. 1 with regard to forming an image with satisfactory tonal rendition due to changes in environmental conditions.

Additionally, although Hayashi teaches such a problem may exist, in some prior art laser printing devices, Hayashi does not teach that the problem exists with a prior art laser printing device wherein the it is known that the bias voltage of a developer is changed to adjust the amount of the toner developed, such as Prior Art Fig. 1. Which is why the teaching of Prior Art Fig. 1 with regard to changing the bias voltage of a developer to adjust the amount of the toner developed, is germane to the issue. Since Prior Art Fig. 1 already adjust toner development,

speculation

which could have been due to environmental conditions, then there is no teaching that applying Hayashi is necessary. Therefore, there is no *prima facie* basis for modifying Prior Art Fig. 1 nor for combining the applied art of Tomita, Hayashi and Prior Art Fig. 1 to derive an invention similar to Applicant's. Therefore, the rejection is deemed to be in error and should be withdrawn.

Further, Tomita is silent with regard to the "problem with forming an image with satisfactory tonal rendition due to changes in environmental conditions." Accordingly, one of ordinary skill in the art would not have had any reason to look to Tomita for a solution to the apparent problem of forming an image with satisfactory tonal rendition due to changes in environmental conditions. Accordingly, the Examiner has not provided a *prima facie* basis for combing all the applied reference, in particular, has not provided a *prima facie* basis for including Tomita in the combination of Hayashi and Prior Art Fig. 1. Therefore, the rejection is deemed to be in error and should be withdrawn.

The Examiner has erroneously indicated that because Tomita teaches changing the power level of a light source and that Hayashi teaches it is known to change the power level of a light source due to environmental conditions then it would have been obvious to derive an image forming apparatus capable of forming an image with satisfactory tonal rendition regardless of changes in environmental conditions by combining the teachings of Prior Art Fig. 1, Tomita and Hayashi. Note that Hayashi's teachings of 1) an image forming device using laser and 2) regulating the amount of light of the laser due to environmental conditions. Accordingly, if one of ordinary skill in the art had found Prior Art Fig. 1 device's ability to form an image with satisfactory tonal rendition due to changes in environmental conditions to be deficient, then one may have looked to Hayashi to solve the problem. However, since there is no teaching of such

a problem with regard to Prior Art Fig. 1, then there is clearly no *prima facie* basis for looking to Hayashi. Further, as noted above, if one of ordinary skill in the art had found Prior Art Fig. 1 device's ability to form an image with satisfactory tonal rendition due to changes in environmental conditions to be deficient and then looked to Hayashi to solve the problem, there is still no *prima facie* basis supporting the Examiner's suggestion of looking to Tomita for a solution of the problem, since the ***supposed*** problem would already have been solved by the combination of Prior Art Fig. 1 and Hayashi. The Examiner has not indicated why one of ordinary skill in the art would have found it necessary to apply the teaching of Tomita other than a hindsight basis of needing a teaching of a *chopping means* in order to reject the pending claims.

Therefore, the rejection is deemed to be in error and should be withdrawn.

The Examiner is respectfully requested to reconsider the application, withdraw the objections and/or rejections and pass the application to issue in view of the above amendments and/or remarks.

Respectfully submitted,

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